

Response to the “Citizen Environmental Monitoring” Report, June 2007 Los Alamos National Laboratory, July 2007

Summary

Los Alamos National Laboratory places a premium on protecting public health. We welcome input on ways in which we might improve our extensive monitoring regimen. We regularly monitor for radiation samples from soil, groundwater, and vegetation (both natural planted and crops).

The report “Citizen Environmental Monitoring” by Marco Kaltofen and Tom Carpenter (June 2007) contains no new or surprising information on radioactivity in Los Alamos County or threat to human health. We accept on faith the data gathered by the team, but we are concerned that the conclusions drawn or implied are erroneous.

- Most of the radioactivity these researchers found in dust appears to be natural lead-210, bismuth-210, and polonium-210, which are all progeny of naturally occurring radon, which is not a byproduct of work at the Laboratory.
- The uranium also appears to be natural.
- The strontium-90 and cesium-137 are almost certainly from nuclear tests, as is the plutonium at most locations. At one location, a sample was taken from a well-known site that is already part of Los Alamos National Laboratory’s clean-up program.

We will continue to review this report for any ways in which we might improve our extensive monitoring regimen.

General Considerations

As stated in Section 5 of the report, naturally occurring radon causes a dose to humans of about 200 millirems per year. Almost all of this dose comes from radon decay products that stick to dust particles and are inhaled. One of these, lead-210, has a 22-year half-life and so remains in the dust, together with its progeny, bismuth-210, and polonium-210. The concentrations that one would expect to find in various locales are consistent with those described in the report. Also, as noted in the report (Section 6.1), indoor dust samples have higher concentrations than surrounding soils because radon gas diffuses out of the soil, and radon decay products (which are electrically charged) stick to dust particles.

Based on the isotopic ratios, the uranium described in the report also appears to be natural and does not reflect the isotopic ratios representative of historical experimental activities at LANL. The reported concentrations are consistent with those routinely measured in Northern New Mexico. The concentrations of natural uranium, natural thorium, their progeny, and natural potassium-40 are all higher in Northern New Mexico than in most of the United States. And most of the radioactivity described in the report is consistent with naturally occurring sources.

The strontium-90 and cesium-137 concentrations are consistent with global fallout. Most global fallout was brought to earth by rain and snowfall, so the concentrations in Los Alamos are higher than in the surrounding regions of lower rainfall. Nevertheless, the levels reported in the Kaltofen-Carpenter report are consistent with what would be expected in this region. Furthermore, the ratio of strontium-90 to cesium-137 is consistent with the ratios observed in global fallout, and is not consistent with the ratios observed at any locations associated with LANL. Therefore, the strontium-90 and cesium-137 are almost certainly not from LANL.

At most locations, the plutonium is also consistent with global fallout, with the notable exception of the sample from downtown Los Alamos, which is the result of contamination from the Manhattan Project. The concentration, 2.86 picocuries per gram, is far below LANL risk-based screening levels. Moreover, the sample location is scheduled for possible cleanup in keeping with the New Mexico Environment Department Consent Order.

Conclusion

We have reviewed the data presented by the authors and found them to be consistent with our data and calculations.

Radon Resources

- <http://www.epa.gov/radon/>
- <http://www.nmenv.state.nm.us/nmrcb/radon.html>